

Claims

1. An immune adjuvant comprising a viral envelope.
- 5 2. The adjuvant of claim 1 wherein the aforementioned adjuvant is an adjuvant for enhancing an immune response.
3. The adjuvant of claim 1 or 2 wherein the aforementioned adjuvant is an adjuvant for enhancing an antitumor immunity.
- 10 4. The adjuvant of claims 1 to 3 wherein the aforementioned virus is a virus belonging to a family selected from the group consisting of Retroviridae, Togaviridae, Coronaviridae, Flaviviridae, Paramyxoviridae, Orthomyxoviridae, Bunyaviridae, Rhabdoviridae, Poxviridae, Herpesviridae, Baculoviridae, and Hepadnaviridae.
- 15 5. The adjuvant of claims 1 to 4 wherein the aforementioned virus is a species selected from hemagglutinating virus of Japan, retrovirus, adenovirus, adeno-associated virus, herpes virus, vaccinia virus, pox virus and influenza virus.
- 20 6. The adjuvant of claims 1 to 5 wherein the aforementioned virus is hemagglutinating virus of Japan.
- 25 7. A viral envelope for use as an immune adjuvant.
8. A hemagglutinating virus of Japan envelope for use as an immune adjuvant.
- 30 9. A hemagglutinating virus of Japan envelope for use as an antitumor immunity adjuvant.
- 35 10. A use of a viral envelope and cisplatin for improving the tumor antigen-presenting capability of antigen-presenting

cell, which results in the accumulation of cytotoxic T-lymphocyte (CTL) cells in a tumor tissue.

11. A use of a viral envelope, cisplatin and a
5 chemotherapeutic agent for improving the tumor antigen-presenting capability of antigen-presenting cell, which results in the accumulation of cytotoxic T-lymphocyte cells in a tumor tissue.

10 12. The use of claim 10 or 11 wherein the aforementioned viral envelope is a hemagglutinating virus of Japan envelope (HVJ-E).

13. The use of claims 10 to 12 wherein the aforementioned
15 chemotherapeutic agent is bleomycin.

14. A method of improving the tumor antigen-presenting capability of antigen-presenting cell, which results in the accumulation of cytotoxic T-lymphocyte cells in a tumor
20 tissue, which method uses a viral envelope and cisplatin.

15. A pharmaceutical composition for improving the tumor antigen-presenting capability of antigen-presenting cell, which results in the accumulation of cytotoxic T-lymphocyte
25 cells in a tumor tissue, which composition comprises a viral envelope and cisplatin.

16. A use of a viral envelope and cisplatin for the manufacture of a pharmaceutical for improving the tumor
30 antigen-presenting capability of antigen-presenting cell, which results in the accumulation of cytotoxic T-lymphocyte cells in a tumor tissue.

17. A pharmaceutical composition comprising a chemotherapeutic
35 encapsulated in a viral envelope vector having an

adjuvanticity as an active ingredient.

18. The pharmaceutical composition of claim 17 wherein the chemotherapeutic is an anticancer drug.

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19. The pharmaceutical composition of claim 17 or 18 wherein the chemotherapeutic is one or more kinds selected from bleomycins, anthraquinone series carcinostatics, mitomycins, actinomycins, camptothecines, cisplatins, streptozotocin, 5-
10 fluorouracil (5-FU) and derivatives thereof, pirarubicin, and pharmacologically acceptable salts thereof.

20. The pharmaceutical composition of claims 17 to 19 wherein the bleomycins are bleomycin and pharmacologically acceptable
15 salts thereof, and peplomycin and pharmacologically acceptable salts thereof.

21. The pharmaceutical composition of claims 17 to 20 wherein the bleomycins are bleomycin hydrochloride, bleomycin sulfate
20 and peplomycin sulfate.

22. The pharmaceutical composition of claims 17 to 21 wherein the virus having an adjuvanticity is derived from a virus belonging to a family selected from the group consisting of
25 Retroviridae, Togaviridae, Coronaviridae, Flaviviridae, Paramyxoviridae, Orthomyxoviridae, Bunyaviridae, Rhabdoviridae, Poxviridae, Herpesviridae, Baculoviridae, and Hepadnaviridae.

30 23. The pharmaceutical composition of claims 17 to 22 wherein the aforementioned virus is one kind selected from hemagglutinating virus of Japan, retrovirus, adenovirus, adeno-associated virus, herpes virus, vaccinia virus, pox virus and influenza virus.

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24. The pharmaceutical composition of claims 17 to 23 wherein the chemotherapeutic is one or more kinds selected from bleomycin hydrochloride, bleomycin sulfate and peplomycin sulfate, and wherein the virus is hemagglutinating virus of
5 Japan.

25. The pharmaceutical composition of claims 17 to 24, which is an injection.

10 26. The pharmaceutical composition of claims 17 to 25, which is a therapeutic agent for a solid cancer.

27. The pharmaceutical composition of claim 26 wherein the solid cancer is one kind selected from lung cancer, breast
15 cancer, digestive cancer, head and neck cancer, gynecologic cancer, urological cancer, osteochondrosarcoma, malignant lymphoma and cancer unknown primary.

28. The pharmaceutical composition of claim 27 wherein the
20 digestive cancer is one kind selected from stomach cancer, colon cancer and esophagus cancer.

29. The pharmaceutical composition of claim 27 wherein the head and neck cancer is one kind selected from maxillary
25 cancer, tongue cancer, lip cancer, pharynx cancer, larynx cancer and mouth cancer.

30. The pharmaceutical composition of claim 27 wherein the gynecologic cancer is one kind selected from uterine cancer,
30 ovarian cancer and uterine cervix cancer.

31. The pharmaceutical composition of claim 27 wherein the urological cancer is one kind selected from prostate cancer, bladder cancer, kidney cancer, renal pelvic and ureteral
35 cancer, testicular tumor, adrenal tumor and penis cancer.

32. A pharmaceutical composition comprising a viral envelope vector having an adjuvanticity as an active ingredient, which is subjected to use in combination with a chemotherapeutic.

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33. The pharmaceutical composition of claim 32 wherein the viral envelope vector having an adjuvanticity and the chemotherapeutic are contained in a preparation.

10 34. A pharmaceutical composition for inducing antitumor immunity in a living organism, and treating a solid tumor, which comprises an anticancer drug or immunostimulant encapsulated in a hemagglutinating virus of Japan envelope.

15 35. A pharmaceutical composition for inducing antitumor immunity in a living organism, and treating a solid tumor, which comprises an anticancer drug or immunostimulant encapsulated in a hemagglutinating virus of Japan envelope, and an additional anticancer drug.

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36. The pharmaceutical composition of claim 34 or 35 wherein the hemagglutinating virus of Japan envelope is not in the form of liposome.

25 37. The pharmaceutical composition of claims 34 to 36 wherein the anticancer drug is bleomycin or a pharmacologically acceptable salt thereof, or peplomycin or a pharmacologically acceptable salt thereof.

30 38. The pharmaceutical composition of claim 34 or 35 wherein the immunostimulant is a protein comprising granulocyte-macrophage colony-stimulating factor (GM-CSF).

35 39. A pharmaceutical composition for inducing antitumor immunity in a living organism, and treating a solid tumor,

which comprises a hemagglutinating virus of Japan envelope as an active ingredient, and which is subjected to use in combination with an anticancer drug or immunostimulant.

5 40. A pharmaceutical composition for inducing antitumor immunity in a living organism, and treating a solid tumor, which comprises a hemagglutinating virus of Japan envelope as an active ingredient, and which is subjected to use in combination with an anticancer drug or immunostimulant and an
10 additional anticancer drug.

41. A method of inducing antitumor immunity in a living organism to treat a solid tumor, which comprises administering a pharmaceutical composition comprising an anticancer drug or
15 immunostimulant encapsulated in a hemagglutinating virus of Japan envelope.

42. A method of inducing antitumor immunity in a living organism to treat a solid tumor, which comprises administering
20 a pharmaceutical composition comprising an additional anticancer drug in addition to an anticancer drug or immunostimulant encapsulated in hemagglutinating virus of Japan envelope.

25 43. The method of claim 41 or 42 wherein the hemagglutinating virus of Japan envelope is not in the form of liposome.

44. The method of claims 41 to 43 wherein the anticancer drug is bleomycin or a pharmacologically acceptable salt thereof,
30 or peplomycin or a pharmacologically acceptable salt thereof.

45. The method of claims 41 to 44 wherein the immunostimulant is a protein comprising granulocyte-macrophage colony-stimulating factor (GM-CSF).

46. A use of an anticancer drug or immunostimulant encapsulated in a hemagglutinating virus of Japan envelope for the manufacture of a pharmaceutical that induces antitumor immunity in a living organism to treat a solid tumor.

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47. A use of an anticancer drug or immunostimulant encapsulated in a hemagglutinating virus of Japan envelope and an additional anticancer drug for the manufacture of a pharmaceutical for inducing antitumor immunity in a living
10 organism to treat a solid tumor.

48. A use of a hemagglutinating virus of Japan envelope as an adjuvant for the manufacture of a drug composition for inducing antitumor immunity in a living organism to treat a
15 solid tumor.

49. A use of a hemagglutinating virus of Japan envelope as an adjuvant and a delivery vector encapsulating an anticancer drug or immunostimulant for the manufacture of a
20 pharmaceutical for inducing antitumor immunity in a living organism to treat a solid tumor.

50. A use of a hemagglutinating virus of Japan envelope as an adjuvant and a vector delivering an anticancer drug or
25 immunostimulant for the manufacture of a pharmaceutical for inducing antitumor immunity in a living organism to treat a solid tumor.

51. A use of a hemagglutinating virus of Japan envelope and an
30 anticancer drug in combination for inducing tumor immunity in a living organism.

52. A use of a hemagglutinating virus of Japan envelope for introducing cytotoxic T-lymphocyte into solid tumor tissue to
35 induce an antitumor effect.

53. A use of a hemagglutinating virus of Japan envelope in preoperative auxiliary therapy (neoadjuvant therapy) to induce antitumor immunity in a living organism.

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54. The use of claims 46 to 53 wherein the hemagglutinating virus of Japan envelope is not liposome.

55. The use of claim 46, 47, 49, 50, 51, 54 or 55 wherein the
10 anticancer drug is bleomycin or a pharmacologically acceptable salt thereof, or peplomycin or a pharmacologically acceptable salt thereof.

56. The use of claim 46, 47, 49, 50 or 54 wherein the
15 immunostimulant is a protein comprising granulocyte-macrophage colony-stimulating factor (GM-CSF).

57. A pharmaceutical composition which comprises a hemagglutinating virus of Japan envelope and an anticancer
20 drug for the treatment of urological cancer.

58. The pharmaceutical composition of claim 57 wherein the urological cancer is one kind selected from prostate cancer, bladder cancer, kidney cancer, renal pelvic and ureteral
25 cancer, testicular tumor, adrenal tumor and penis cancer.

59. The pharmaceutical composition of claim 57 or 58 wherein the anticancer drug is at least one kind selected from adriamycin, daunomycin, aclarubicin, amrubicin, idarubicin,
30 epirubicin, pirarubicin, dacarbazine and mitoxantrone.

60. A pharmaceutical composition for the treatment of bladder cancer, which comprises a hemagglutinating virus of Japan envelope and adriamycin.

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61. A pharmaceutical composition for intravesical injection for the treatment of bladder cancer, which comprises a hemagglutinating virus of Japan envelope and adriamycin.

5 62. A use of a hemagglutinating virus of Japan envelope and adriamycin in combination for the treatment of bladder cancer.

63. A method for the treatment of urological cancer, which comprises administering a hemagglutinating virus of Japan
10 envelope and an anticancer drug.

64. The method of claim 63 wherein the urological cancer is one kind selected from prostate cancer, bladder cancer, kidney cancer, renal pelvic and ureteral cancer, testicular tumor,
15 adrenal tumor and penis cancer.

65. The method of claim 63 or 64 wherein the anticancer drug is at least one kind selected from adriamycin, daunomycin, aclarubicin, amrubicin, idarubicin, epirubicin, pirarubicin,
20 dacarbazine and mitoxantrone.

66. A use of a hemagglutinating virus of Japan envelope and an anticancer drug for the manufacture of a pharmaceutical for the treatment of bladder cancer.
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67. The use of claim 66 wherein the anticancer drug is at least one kind selected from adriamycin, daunomycin, aclarubicin, amrubicin, idarubicin, epirubicin, pirarubicin, dacarbazine and mitoxantrone.
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68. A pharmaceutical composition for the treatment of urological cancer, which comprises a hemagglutinating virus of Japan envelope as an active ingredient, and which is subjected to use in combination with an anticancer drug.
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